

Before you start, **read these instructions first** to understand what you need to do to install this product.

Assumptions

These **Pickup Switch Upgrade™** products for your Telecaster are designed to control four magnetic pickup coils. **Note:** *Active* (uses batteries) or *Pizeo* pickups cannot be used with our upgrade products.

Tools Needed

You may need one or more of the following tools (*not included with purchase*) to install your **Pickup Switch Upgrade™** product (*see each product section for additional specific tool requirements*).

- Wire cutters / Wire strippers
- Regular pliers
- Small Phillips & straight slot screwdriver
- Ohmmeter to measure continuity
- Optional: rotary file and electric drill
- Optional: Soldering iron (25/30 watt max.) with fine tip, rosin-core solder .022" dia.

Preamble

Although not required for this product, you might want to completely **remove all strings** from your instrument for easy access to its parts. The strings are probably already old and replacing them will make your instrument sound even more *brilliant* after you install this product.

Your Upgrade will have you cutting existing wires on your instrument. You may need to make wire connections, increase the length of existing wires, and remove some wood in your instrument body cavity.

Because you will be making several changes to your instrument, you need to have a plan to install this **Pickup Switch Upgrade™** product.

Use a pencil to draw the original circuit connections of your instrument **before** you proceed. When you record where the wires (and colors) were removed from your instrument, you have a way to restore it to its original condition should it become necessary.

Adding Extra Wire

If your pickup or input jack wires are too short to reach the specified connection of the green terminal strip on the **Pickup Switch Upgrade™** circuit board, here is what to do. Measure out the needed length of the RED or BLACK wire in the included **PARTS BAG** to permit the wire to reach the applicable connection. A length of 3" (7.62cm) is budgeted for each wire extension. Insert the unstripped end of each wire into the 2-wire UY2 yellow/clear connector and clamp down using regular pliers.

Use pliers to squeeze the UY2 connector top button so it is flush with the body to create a permanent electrical connection. Verify electrical continuity between the two pickup wires using an ohmmeter (*some coil resistance will be present*). The 71B grey wire nuts are used to make firm and insulated connection to the input jack wires, but let you easily disconnect the upgrade if needed.

Note: If you are installing your own pickups and they use a shielded/braided cable as one of the coil wires, you will need to solder black wire to the shielded cable because the **green** terminal strip (J1) does not directly accept shielded cable.

Product Variants

This document contains information for both the **Bare version** (*pickups not included*) and **Loaded version** (*contains our standard AweSome pickups*).

2. 72 TELECASTER DELUXE UPGRADE

You have received an assembled and tested **72 Telecaster Deluxe Reissue Upgrade** designed to install into a standard 72 Telecaster Custom Reissue guitar. It contains our *high performance* **Pickup Switch Upgrade™** T4-Switch product, one tone and volume control with matching knobs. It is designed to give you more pickup tones. No soldering is needed to install this product. Depending on whether you received the Bare version or Loaded version, some or all of the following items may be included in a Parts Bag.

- An AweSome Musical Instruments headstock decal to apply to your instrument
- Several business cards to pass out to friends
- An equal length each of black and red insulated wire (to lengthen pickup and input jack wire if needed)
- 4 yellow/clear connectors (UY2) to make pickup wire extension connections if needed
- 2 grey wire nuts (71B) to connect input jack wires to your Telecaster control plate upgrade product

Preparation

If needed, remove your strings. Remove your existing pickguard attaching screws. Lift it out and document how your original pickguard is wired (see *Preamble* on page 1) *before* you start this upgrade.

Disconnect the **input jack** hot and ground wires from your stock control plate. The wires stay on the input jack.

If needed, disconnect the bridge ground wire. Remove your pickguard. Temporarily stow the input jack wires and bridge ground wire within the body cavity.

Confirm that the upgrade product you received will lay completely flat and within the routed body cavity with no interference by the wood body. If the upgrade lays flat on your instrument and the plate mounting holes line up with the body mounting holes, proceed to the next section, *Terminal Strip*, to continue with the upgrade process.

If your instrument has a body cavity with a non-standard dimension preventing the upgrade product from being installed flush against the body, see the *Solving Installation Issues* topic in this document for help.

Terminal Strip

If you received the **Loaded version**, go to the *Connecting Your Wires* topic. If you are installing two of your own 4-wire humbucker pickups into a Bare upgrade, here is how to attach wires to the **green** terminal strip (J1) that is on the circuit board. Use a small screwdriver or writing pen tip and press down on the square *release button* located directly above the wire hole. Hold the button down and insert the stripped wire completely into the wire connection hole and then release the button. Lightly tug on the wire to confirm it is firmly gripped by the Terminal Strip. A legend is printed on the circuit board with the name of each terminal strip wire hole from left to right. Attach each wire to the correct terminal strip hole. In all instances, the **GND** and **VOL** wires from the Volume/Tone control circuit displayed in **Figure 2** to the wire connection holes on the **green** terminal strip are already connected prior to shipping your product.

T4-Switch (10-hole terminal strip): [GND] [VOL] [+]Coil-4[-] [+]Coil-3[-] [+]Coil-2[-] [+]Coil-1[-]

Caution: Do not insert hard items in the wire holes because it will decrease reliable electrical connection.

Connecting Your Wires

There is no industry standard for pickup wire lead colors. More common color pairs are red/black, red/white, black/white and white/shield. You are advised to use consistency when connecting *your* pickup wire color pairs to the [+] and [-] pickup connections on the **green** terminal strip (J1).

Determine which wire color for each pickup coil will be attached to the applicable [+] and [-] **green** terminal strip connector on the circuit board.

Determine if there is enough wire length from each pickup coil to *comfortably* reach the corresponding connectors on the green terminal strip on the **Pickup Switch Upgrade™** circuit board. If not, refer to the “*Adding Extra Wire*” topic (page 1).

Strip off 3/16” (4.76mm) insulation from the end of each pickup wire and also the input jack wires then twist the exposed wire strands so they are tightly bound. Optionally, use a soldering iron to lightly "tin" the wires. Insert the bare wire ends of each pickup pair into the correct location on the **green** terminal strip (J1) using the process described in the above “*Terminal Strip*” topic.

Use the two gray wire nuts (71B) to connect the wires labeled “Input Jack” to the wires on your **input jack**. The red wire goes to the hot lead (normally red) on the input jack and the black wire goes to the ground lead on the input jack.

Note: If you have a ground wire coming from the bridge (and maybe from body cavity shielding), connect it to the ground lead on the input jack.

Connecting your pickups to the T4-Switch

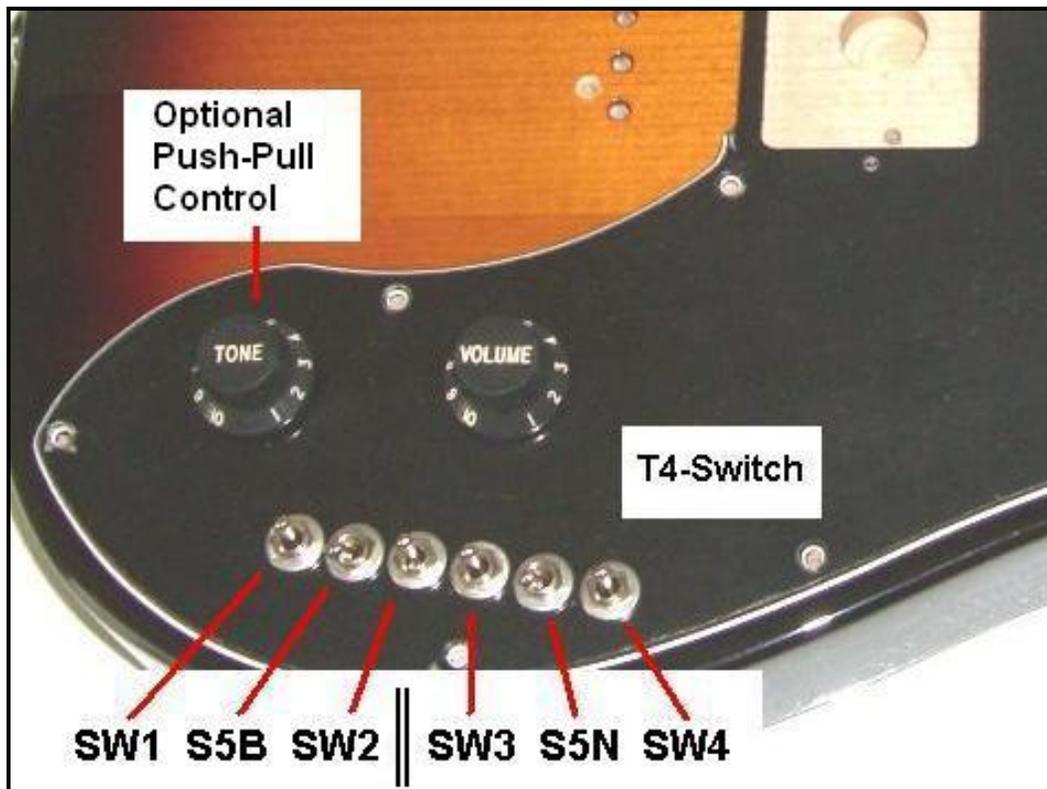
This upgrade is for HH instruments and requires that you use true 4-wire humbucker pickups.

Using two 4-wire humbucker pickups:

Connect your north NECK2 pickup coil wire pair to the	[+]Coil-4 [-] connections on the green terminal strip
Connect your south NECK1 pickup coil wire pair to the	[+]Coil-3 [-] connections on the green terminal strip
Connect your north BRIDGE2 pickup coil wire pair to the	[+]Coil-2 [-] connections on the green terminal strip
Connect your south BRIDGE1 pickup coil wire pair to the	[+]Coil-1 [-] connections on the green terminal strip

Telecaster Upgrade Switch Identification and Use Summary

Here is how the controls of our T4-Switch product are laid out.



There are really two "groups" of switches:

(S1B, S5B, S2B)	-and-	(S1N, S5N, S2N)
(used to control Bridge 4-wire (humbucker pickup coils))		(used to control Neck 4-wire (humbucker pickups coils))

Here is how the switches are used:

Switches SW1, SW2, SW3 and SW4 are ON-OFF-ON switches used to turn an individual pickup coil Off and On. The middle position of each switch is Off. The down position turns the pickup On (in *normal-phase*) and the Up position turns the pickup On (in *reverse-phase*).

Switches S5B and S5N are ON-ON (a.k.a. ON-NONE-ON) switches that are used to put select pickup coils into a **Series circuit** when in the Up position. When Down, the select pickup coils are in a **Parallel circuit**. Pretty simple, don't you agree?

When switches *S5B* and *S5N* are in the *Down position*, you will get 29 different pickup tones from the various combinations of four pickup coils being Off or On (either in *normal-phase* or in *reverse-phase*) using switches S1B, S1N, S2B and S2N. These pickup tones are also due to the combination of pickup coils being in a **Parallel circuit**.

The other switches (S5B and S5N) are ON-ON (a.k.a. ON-NONE-ON) switches are used to put select pickup coils into a **Series circuit**. Here are two things you must remember when putting pickup coils into a Series circuit:

First, putting two pickup coils in Series circuit creates a "*Compound*" (i.e., Humbucker) pickup that gives you about 8 to 15 percent More output (think Heavy Metal/Jazz tone).

Second, because the pickup coils are in a Series circuit, **BOTH** of the affected pickup coils that are in a Series circuit **MUST** be On (either in *normal-phase* or *reverse-phase*). Any non-Series circuit pickup can be either Off or On (either in *normal-phase* or *reverse-phase*).

What Each Switch Controls

Switch SW1: Turns on pickup coil #1 (down is *normal-phase*, up is *reverse-phase*, center is Off.)

Switch S5B: Puts both coils #1 and #2 into a Series circuit when Up. Both pickup coils **MUST** be On.

Switch SW2: Turns on pickup coil #2 (down is *normal-phase*, up is *reverse-phase*, center is Off.)

Switch SW3: Turns on pickup coil #3 (down is *normal-phase*, up is *reverse-phase*, center is Off.)

Switch S5N: Puts both coils #3 and #4 into a Series circuit when Up. Both pickup coils **MUST** be On.

Switch SW4: Turns on pickup coil #4 (down is *normal-phase*, up is *reverse-phase*, center is Off.)

For product ID 007a and 007b, the various combinations of all of these switches will give you 68 pickup tones.

For product ID 007c and 007d, the Tone control push-pull pot of the **optional VT-3 Volume-Tone control** puts the north Bridge and south Neck pickup coils into a series circuit. This gives you 34 additional pickup tones, several of which are **QuadraBucker™** pickup tones (*all four pickup coils in series*). The various combinations of all of these switches and the push-pull tone control will give you 102 pickup tones.

Again, note that when you put two or more pickup coils into series connection, they **ALL** must be on – otherwise the circuit will be "open" and no sound will be produced by the coils.

See our website **Document Library** page (*Documents #C and #D*) for tone mapping forms.

Validating

Connect your instrument to an amplified source with the volume set to low. Turn the switches on and off as described in "*Switch Identification and Use Summary*" topic while gently tapping the magnet of the pickup coil that should be "on" with a small screwdriver to confirm pickup response. Also confirm the correct operation of the Volume and Tone controls.

If you receive the stated results, install the upgrade mounting hole screws. Next, install a new set of strings. Welcome to the *Grand Canyon Wide* range of AweSome pickup tones.

This product gives your 4-pickup coil instruments a HUGE spectrum of sounds ranging from Muddy/Dirty Blues *-to-* Classic Jazz *-to-* Ring-in-a-bell Surf *-to-* Intense Country Twang and will even give you those elusive out-of-phase *Tin-Canny* pickup tones. Now you can duplicate the sound of virtually every electric guitar ever made. This product will produce a wide spectrum of unique pickup sounds that you have **NEVER** even heard before.

Solving Installation Issues

Here is how to solve installation issues that involve insufficient body cavity width and/or depth.

1. The Upgrade pickguard does not lay flat on the body.

It appears Fender never imposed rigorous standards on their manufacturing *partners* in China, Malaysia, Indonesia, Mexico, Korea, India, etc. Because of this, some instruments were made with a control plate body cavity that is slightly smaller than the cavity in the *standard* American instruments. Further, some instruments may have a body cavity depth with two different levels and may require some material removal so the plate of the Telecaster Upgrade will completely lay flat on the body.

To solve these body cavity width and depth issues, you can use a power drill with a rotary file to remove a small amount of material on either side of the body cavity. You should only remove enough material to permit installation. Typically, removing 1/32" off each side will be adequate to solve this issue.

The below illustration shows you how to use the electric drill and rotary file bit to remove excess material on each side of the body cavity. Also illustrated are two common rotary file bits. The top one is a rasp bit, the lower one is a scraping bit. Either will work.

When using this procedure, it is recommended that you enlist the help of a friend to firmly hold the guitar body while removing the unneeded wood using the rotary file. Using a blanket or other material between the guitar body and the working surface will prevent the bottom of the body from being scratched.

